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EARLY VERSUS LATE OPERATIONS IN ACUTE CHOLECYSTITIS

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Waltman Walters of the Mayo Clinic, in discussing a paper on acute cholecystic disease in 1937, stated that "In the last four years the point of view of many surgeons in the United States has changed in regard to the propitious time for operation in cases of acute cholecystitis." Ever since the subject was discussed at the meeting of the American Surgical Association in 1933 we have been slowly but surely undergoing a tremendous change in our attitude towards the acute gall bladder; however, the subject is far from being settled and the closest of scrutiny is still necessary before the many controversial aspects of this problem can be considered settled.

Many extensive statistical reviews can be found in the surgical literature of the past four years. It is the purpose of this discussion to review several of these, and also to present for your critical analysis a summary of the work which has been performed in our hospital. Our small series is of unusual value in that it presents the results obtained in a general hospital, where the work is performed by a fairly large group of surgeons, of varying opinions, on what may well be considered as a whole, the poorest and sickest patients in our state. Many of these patients, either because of their own stubborness or because of the conservative attitude of the general practitioner who first saw them, are sent to the hospital long after the onset of their illness.

It seems wise at this time to call to your attention the fact that in acute cholecysitis as in acute appendicitis we have many degrees of involvement, varying from simple catarrhal inflammation to gangrene and perforation. One rather fortunate feature of gall bladder perforation is that it is more apt to remain localized than is appendiceal perforation, otherwise inflammation of either organ will run through the same cycle. Because of this analogy many have asked—why temporize in the acute gall bladder and operate immediately in the case of the acute appendix?

Before considering the problem of early versus delayed operation and of cholecystectomy versus cholecystostomy let us review and compare the results obtained at the Rhode Island Hospital.

During the five year period 1933-1937 inclusive, 113 ward patients were admitted in whom a diagnosis of acute cholecystitis could be justified. In this group there were 31 (27%) males and 82 females. The youngest patient was 7 and the oldest 79. There were a total of 11 deaths, equivalent to 9.7% of entire series.

TABLE 1
AGE

Age	*No. of Cases*	*Percent*
1-9	1	0.8
10-19	2	1.7
20-29	14	12.3
30-39	23	20.2
40-49	23	20.2
50-59	28	24.6
60-69	16	14
70-79	6	5.2

The symptoms and physical findings were as follows:

(1) PAIN: This was present in all cases. Descriptions of the location varied but usually the pain was localized in the right upper quadrant and was very sharp and persistent. At the onset of the illness, the pain, when the stone is impacted in the cystic duct, can be located in the mid epigastrium.

(2) VOMITING: There was no vomiting in 37 cases or 32% of series. The vomiting also varied from moderate to persistent and continuous.

(3) NAUSEA: In 10% of the 37 cases in which there was no vomiting the patient complained of feeling nauseated. Thus we see that in 27 cases or 23% of series there was neither nausea nor vomiting.

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(4) TENDERNESS: Only 8 cases or 6½ of series did not present this sign. The degree of tenderness varied from mild to excruciating.

(5) SPASM: In 28 cases or 24% of series this sign was not discernible. Variation here was from one extreme to the other.

(6) MASS: A mass was definitely palpable in only 14 cases or 12% of series. In another 5 cases there was a question of whether a mass could or could not be felt. However, we must remember that tenderness and spasm may have prevented the palpation of a mass in other cases.

(7) JAUNDICE: Jaundice was present in only 10 cases or 9% of the series.

TABLE 2
TEMPERATURE ON ADMISSION

Temperature	*No. of Cases*	*Percent*
97-98	8	7
98-98.8	29	25.5
99-100	31	27.2
100-101	21	18.4
101-102	12	10.5
102-103	7	6.1
103-104	4	3.5
104-105	1	0.8

In 68 cases or 60% of the series the temperature on admission was below 100. In 37 cases or 35% of the series the temperature was normal. In only 5% of the cases was the temperature above 100.

TABLE 3
PULSE ON ADMISSION

Pulse Rate	*No. of Cases*	*Percent*
Below 80	29	25.5
81-100	43	37.8
101-120	30	26.4
121-140	11	9.6

TABLE 4
WHITE BLOOD COUNT

White Blood Count	*No. of Cases*	*Percent*
No Report	14	12.3
6,000-8,000	6	5.2
8,000-10,000	15	13.2
10,000-15,000	38	33.4
15,000-20,000	20	17.6
20,00 and over	20	17.6

The highest count in this series was 38,800. The differential count showed a marked preponderance of polymorphonuclear leucocytes.

The history revealed that 45 cases or 40% of the series did not have a history of previous attacks. In the remaining 60% repeated attacks had been experienced from 3 months to 30 years previously.

The duration of the present attack before admission to hospital brings to light the fact that the general tendency of the physician is to treat the patient at home for as long as possible. The fallacy of this mode of treatment will be discussed later.

TABLE 5
DURATION OF ATTACKS BEFORE HOSPITALIZATION

	No. of Cases	*Percent*
1-12 hours	14	12.3
12-24 hours	7	6.1
1-2 days	15	13.2
2-3 days	13	11.4
3-4 days	14	12.3
4-5 days	13	11.4
5-6 days	7	6.1
6-7 days	11	9.6
Over 7 days	19	16.7

Note here that only 21 cases or 18½% of series were hospitalized within twenty-four hours of the onset of the illness and that in 64 cases or 56% of series hospitalization was delayed for three or more days. In order to further understand the reason for this recent upheaval in the treatment of acute cholecystitis, let us examine the following table on the complications of this malady.

TABLE 6
COMPLICATIONS OF ACUTE CHOLECYSTITIS

CLINIC	No. of Cases Oper. on	Condition of G. B. at Oper. Gangrenous No. of Cases	Gangrenous %	Perforated No. of Cases	Perforated %	Mortality No. of Deaths	Mortality % of Cases
R. I. Hospital	83	16	19%	8	10%	9	10.8%
Mayo	76	20	26%	16	21%	3	3.9%
Kunath	90	5	5.6%	23	22%	5	5.6%
Cinc. Gen. Hosp.	89	....	....	....	20%	16	18.7%
Old N. Y. Hosp. 1922-32 (inc.)	106	...	...	...	21%	37	34.7%
New N. Y. Hosp.	153	40	26%	16	10.5%	19	12.5%

In acute cholecystitis, Judd and Phillips report gangrene or perforation in 13.4%, Zinningers in 20.5% and Morris Smith in 22.4%. In the Rhode Island Hospital series there was gangrene or perforation in 29%. A review of most series will show an average of 20% of gangrene or perforation in acute cholecystitis.

In comparison with appendicitis it might be of interest to know that at the New York Hospital in a series of 1000 consecutive appendectomies of which 407 were chronic and 593 acute, there were 104 cases of perforation, represented 17.5% of the

acute cases. During the same period the incidence of perforation of gall bladders equalled 15.7% of the cases of acute cholecystitis.

When one considers these figures it is no wonder that early operation begins to receive its due attention in gall bladder surgery just as it has in surgery of the appendix. Gangrene and perforation with the inevitable associated high mortality is but one of the drawbacks to waiting, once the diagnosis of acute localized cholecystitis has been made.

Cholecystectomy, the procedure of choice, cannot be performed if the operation has been delayed so long that edema and other acute inflammatory processes have so obscured the anatomy that the patient's life is jeopardized if such a procedure were carried out. In these cases the surgeon is compelled to do a simple palliative cholecystostomy.

Kunath shows the objections to cholecystostomy when he reports, "in 42 cases in which a cholecystostomy had been done for acute cholecystitis that in only 40% was the relief permanent while in another 40% there was a recurrence of symptoms in from one to three months." The remaining 20% of the cases did not get even temporary relief. 17% of these cases had to be reoperated upon. He concludes from his study, "that possibly if the cases were followed for a 10-year period that the percentage of cases obtaining permanent relief from cholecystostomies would be much lower than 40."

Other objections to this procedure are: (1) high incidence of post-operative incisional hernia — (19% in Kunath's series); (2) Long duration of bile drainage usually from 2-12 weeks with an aver- of 5; (3) Reoperation is made more difficult and more dangerous.

In spite of this, all of us will readily admit that there are many cases in which cholecystostomy is and has been a life saving procedure, but our duty, if the present figures and opinions are correct, is to see that the number of these cases is reduced. At present there are too many acute cases being kept in bed at home in the hope that the infection will subside. If this should happen we feel that we have accomplished something—but have we, and if so at what price?

In order to evaluate this, let us consider what happens to the cases which are not submitted to immediate operation. We have seen how some go on to gangrene and perforation while others are moribund and inoperable on admission (two cases in our series).

In the Mayo series reported by Wesson and Montgomery 76 out of 87 cases were submitted to immediate operation. In the other 11 cases operation was deferred for various reasons. Of the 11 cases in which immediate operation was not performed 4 had to submit to operation because of recurrence of symptoms. Another patient who had refused operation died within one week. Three patients were not followed and the last three could not be operated on because of existing conditions.

In Kunath's series, 49 cases out of 103 were treated conservatively and in this group were 17 or 35% whose symptoms failed to subside and who were by necessity subjected to operation in an acute stage of the disease. It is this group that carried the high mortality, the high morbidity, the greatest number of complications and the greatest number of hospital days.

In our series of 113 cases there were 30 cases or 26.4% of the series in which for various reasons no operation was performed.

Two of these cases died soon after admission;
Two patients were too old (74 and 78);
One patient was too obese;
One patient had severe diabetes;
The remaining 24 cases were very mild.

TABLE 7

DATA	Immed. Oper. (24 hours or less after admission)		Delayed Oper. (Average delay 9 days Extremes—11½-44 days 24 or more after admission)		Total	
Number of Cases	37 or 44.4%		46 or 55.6%		83	
	No.	%	No.	%	No.	%
Cholecystostomy	19	51.3	20	42	39	46.8
Gangrene	8	21.6	7	14.7	15	18
Perforation	2	5.4	6	12.6	8	9.6
Deaths	3	15.6	2	10	5	13
Cholecystectomy	14	37.8	23	48.3	37	44.4
Gangrene	0		1	2.1	1	1.2
Perforation	2	5.4	0		2	4.4
Deaths	1	7.1	1	4.3	2	4.4
Cholecystostomy & Choledochostomy	1	2.7	1 (4 days)	2.1	1	1.2
Deaths	0	0	0		0	
Cholecystectomy & Choledochostomy	2	5.4	2 (3 & 11 days)	4.2	4	4.8
Deaths	0	0	0		0	
Cholecystectomy & Drainage Head of Pancreas	1	2.7	0		1	1.2
Deaths	1 (14 days p.o.)	100	0		1	100
Total Mortality	6	16.2	3	6.3	9	10.8

Examination of Table No. 7 will show what happened to the 83 surgical cases in this series. Sixty-one or 73% of surgical cases were found to have stones in the gall bladder. In many of these a stone

was found impacted in the cystic duct and causing obstruction which, superimposed upon the already existing infectious process in the gall bladder, added another serious pathological factor to the situation.

Study of this table presents many interesting facts:

1. Cholecystostomies predominate in the immediate group while cholecystectomies are a little more common in the delayed group.
2. Gangrene or perforation were present in 50% of the immediate and 65% of the delayed group.
3. The death rate was 16% in the immediate group and 6% in the delayed group but here it is necessary to remember that the former group represents the sickest patients in this series.
4. Even though there had been an average delay of 9 days in the delayed group the incidence of cholecystostomy was only reduced 9%, from 51% to 42%. Combine with this the fact that several of the cholecystectomies were performed on cases in which an acute process was still present and you realize that the delay was of help in less than 25% of the cases in the operative group and this 25% represents probably the mildest cases, which could have been submitted to immediate surgical intervention with little or no greater risk. That this statement is true was definitely proven by Heuer who in 1937 reported a series of 153 cases of acute cholecystitis in which cholecystectomy was performed in 138 cases and cholecystostomy in 15 cases with a total mortality of only 3.2%.

Thus we see that the price paid for the delay in surgical intervention, whether due to the conservative attitude of the doctor outside or inside the hospital, does not warrant the delay. Complications in the cases of acute cholecystitis are serious and can be prevented only by operation at the earliest possible moment. Operation in the early stages not only is less dangerous but can be complete rather than palliative. Let us, then, do all in our power to impress both the laity and the profession with the necessity not only for early hospitalization but also for early operation.

Conclusion

One hundred and thirteen cases of acute cholecystitis are presented, with a summary of the signs, symptoms and outcome. 74% of the cases were treated surgically and 25% conservatively. The mortality rate was 9.7%. Operative mortality rate was 10.8%. Early hospitalization and operation seem to offer hopes for better results in the treatment of acute cholecystitis.

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THE ROLE OF THE PATHOLOGIST IN THE CANCER PROBLEM

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The chief role of the pathologist in the cancer problem is to aid in diagnosis. He may also be able to give information that will help determine the choice of treatment and, at times, can throw some light on the prognosis.

Diagnosis

It is true that certain kinds of cancer, even in an early stage, have very definite and constant characteristics that are discernible clinically. Such tumors can be diagnosed by the clinician with a high degree of accuracy. An example is the common rodent ulcer or basal cell epithelioma of the skin. In a second group of tumors which are not accessible for either clinical examination or biopsy we are largely dependent for diagnosis upon x-ray examination. This is especially true of tumors of the gastro-intestinal tract, the lung, the kidneys and the bones. There remain, however, a number of lesions which clinically may or may not be cancer, concerning which accurate and final diagnosis can be made only by pathologic examination or biopsy. This has become increasingly true during the last few years because of the increasing emphasis upon early diagnosis. Generally speaking, a cancer in which the clincal findings are so definite that accurate diagnosis is possible is not an early cancer.

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Biopsy

The biopsy is universally accepted as the most accurate and specified method of tumor diagnosis. The idea that biopsy stimulates tumor growth or tends to increase metastasis has been largely disproved. Wood, in a study of 673 tumor-bearing rats, found no increase in growth or metastasis in the biopsied group over the control group. Simpson reviewed 7000 patients and could observe no ill-effect of biopsy. At the Curie Institute in Paris, 825 patients with carcinoma of the lip were biopsied with no evidence of harm.

Such danger as there may be lies in unnecessary manipulation by the surgeon in removing the specimen. I have, for example, observed operations where several minutes of pushing, pulling and manipulating were consumed in removing a small nodule from the breast.

A safe method is swift and clean excision with a sharp knife. If visible and small the suspicious area should be entirely removed with a surrounding rim of normal tissue. If too large, a portion only is removed, if possible from the margin. Trauma from manipulation must be avoided. Many prefer the electro-surgical method. If this is used the specimen must be larger because the external portion will be so charred that it is useless for histologic study.

Aspiration biopsy has been developed at the Memorial Hospital in New York, where it has proved very helpful. Because it requires especial skill on the part of both the surgeon and the pathologist it probably will not come to be generally useful.

The bronchoscope, proctoscope, cystoscope and the uterine curette make it possible to secure biopsy specimens from the corresponding parts of the body.

Regardless of the method, skill and judgment must be used in selecting the portion removed. Failure to find tumor in a fragment of tissue removed from the vicinity of a tumor cannot, with justice, be considered a fault of the pathologist, nor of pathology.

Not infrequently it is desirable to have the pathologist present in the operating room for immediate or frozen section diagnosis. If malignancy is found, the radical operation or application of radium may then be completed at once. Those who fear that biopsy stimulates tumor growth or increases metastasis feel that this decreases that danger. As already mentioned we do not believe this is important. Much more important is the fact that delay in treatment, with or without biopsy, is dangerous. Probably the more important reasons are the practical ones of lessening the patient's hospital stay and subjecting him or her to only one operation instead of two with the resulting demands on the time and effort of the surgeon and assistants, the anesthetist, the operating room personnel and the hospital.

Treatment

The decision as to whether or not a suspected lesion is malignant, of course does much to determine the treatment. The findings of the pathologist also help in the choice of treatment within the malignant group. The mere classification of the cancer on the basis of its cell type, in many cases, determines whether the treatment shall be surgery or radiation. For instance it is now universally agreed that the group of malignant lymphomas, of which Hodgkin's Disease is the commonest example, is always to be treated by radiation, while the common mixed tumor of the parotid gland is usually best treated by surgery. Even within a single group of tumors histological study may help to determine which ones may be expected to respond well to radiation and which ones poorly. It might be well to point out that there is a distinction between radio-sensitivity and radio-curability. For example, the malignant lymphomas, as already mentioned, are very sensitive to radiation. The tumor masses may be expected to melt away with relatively small doses of x-ray or radium. Indeed this response is so prompt and so characteristic that it is of considerable diagnostic value. Yet such cases are rarely, if ever, cured. On the other hand, the common rodent ulcer or basal cell cancer of the skin responds less promptly and requires larger dosage, but a definite cure may be expected.

With the rapid improvement in x-ray and radium treatment, types or grades of tumors formerly thought to be radio-resistant are being made to respond, and the value of estimations as to radio-sensitivity by the pathologist is correspondingly lessened.

Prognosis

Here again accurate classification of the tumor on the basis of cell type is of considerable prognostic significance. Some types of malignant neoplasms are never cured. Some other types are usually cur-

able. Of recent years much has been heard of the histological grading of cancer as a basis for prognosis. There can be no doubt that the degree of differentiation as determined by microscopic study, does parallel rapidity of growth and in less degree the ability to metastasize. This does have a certain bearing on prognosis but is overshadowed by other factors, such as the part of the body involved, the duration of the disease, the extent of the local growth, and the presence or absence of metastasis. It is my opinion that histological grading of malignancy has not proved to have the prognostic value that was hoped for it. Probably no other single factor has so much prognostic significance as the presence or absence of metastasis. Occasionally, when the pathologist has an opportunity to study the regional lymph nodes, as in the specimen submitted following radical mastectomy, the presence or absence of tumor cells in these lymph glands is of decided prognostic value.

In conclusion, it is well to remember that every laboratory report is to be evaluated in the light of the history and the clinical findings. It is our opinion that the final decision concerning diagnosis, choice of treatment and prognosis is best arrived at in the light of the findings and opinions of the clinician, the roentgenologist and the pathologist; freely expressed and frankly discussed. Any attempt either to overemphasize or to belittle any one of the three can hardly be called cooperation.

THE ROLE OF THE RADIOLOGIST IN THE CANCER PROBLEM

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The word "radiologist" just used by our chairman probably sounds strange to the ears of many in the audience, particularly of the older generation. In fact I started my own work in this specialty at a time when I had never heard the word, which has come into medical good use only within the past 15 or 18 years. A Radiologist is obviously one who specializes in Radiology, which is defined as "that branch of medical science which deals with the use of radiant energy in the diagnosis and treatment of disease." Tonight we are concerned only with the use of X-rays and Radium in connection with the cancer problem.

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You have already listened to the pathologist, whose contact with this problem is largely on the diagnostic side. You have also heard from the surgeon and the gynecologist, whose concern is largely with the therapeutic aspects of cancer. The radiologist however deals with both the diagnosis and the treatment of cancer, in essentially equal proportions. It is hard to say which part of the radiologist's efforts is the more important. This evening, in the short time available, I can only hope to give you a very brief survey, and will merely touch upon a few of the more important aspects in both the diagnosis and the treatment of malignant disease.

The development in the use of x-rays, particularly in the past 25 years, has completely changed not only the diagnostic approach to cancer, but the entire outlook with respect to prognosis and treatment. A generation ago internal cancer was only diagnosed on a clinical basis, and only those cases which were well advanced and generally terminal were recognized as cancer. Since that time, improvements in x-ray methods and technique have resulted in pushing back the threshold of early diagnosis further and further.

In the alimentary canal the use of x-rays has made it possible to diagnose cancer of the esophagus, stomach, small intestine and colon with increasing accuracy and satisfaction. Improvements, such as study of the mucosal pattern and examination with the addition of insufflated air, have all combined to make the diagnosis more accurate. The addition in recent years of endoscopic methods such as esophagoscopy and more lately gastroscopy has added improvements to the purely x-ray methods, but they do not as yet offer any substitute. By and large the diagnosis of cancer of the alimentary tract is still dependent fundamentally upon the x-ray method of investigation. In spite of all the refinements that have been developed however, the extremely early diagnosis of such cancers is still impossible. Only recently McCarthy of the Mayo Clinic estimated that 75% of the gastric cancers seen at that institution are still hopelessly advanced.

In thoracic cancer the use of x-rays has again been the chief element in advancing our knowledge of such tumors. Here likewise the careful x-ray study of the chest, both fluoroscopically and by means of films, is the foundation of the diagnostic attack. Here also bronchoscopy is extremely useful and in many instances offers the means for making the final differentiation. In general however it is still the x-ray examination which detects the pulmonary abnormality which may be further investigated by endoscopy. What I have said of course relates largely to primary cancer of the lung. With respect to metastatic cancer, we are dealing with a similar problem. The x-ray examination has become an indispensable factor in recognizing chest metastases before operating, in such cases as cancer of the breast and bone sarcoma. Other types of chest malignancy such as lymphoma are dependent very largely upon x-rays for their detection.

In cancer of the urinary tract the entire modern development of urological diagnosis has been closely tied up with the development of x-ray methods, chiefly those of urography. Originally limited to the retrograde filling of the ureters and renal pelves with opaque solutions, the examination in more recent years has been supplemented to a very enormous extent by the development of excretion methods after the intravenous injection of iodine compounds. Here again while the x-ray examination is an absolute essential in the diagnosis of renal cancer, the diagnosis cannot be called early. Real early cancer of the kidney does not cause deformity in the contours of the internal cavities. Consequently when we are able to recognize such deformities, the tumors are essentially well-advanced, although often still operable.

Malignant disease of the bones is another important group where x-ray examination is of fundamental importance. Here also we are concerned with the two types, the metastatic and the primary tumors. The metastatic form is often recognized only by such complications as fresh fracture. Again many cases of internal cancer are only detected when metastases are found in some of the bones, on routine examinations for other purposes.

Accurate diagnosis of the various types of primary bone sarcoma has also been made possible only by the more widespread and earlier use of the x-ray examination. In some clinics more emphasis has been placed on the study of serial x-ray films than upon the bone biopsy.

In most neurological clinics today, whenever a diagnosis of brain tumor has been made, the x-rays are used to search for a possible primary focus for such tumors, before proceeding with surgery. It is much less disturbing to find such foci before rather than after brain surgery. The commonest primary sites are in the lungs, kidneys or alimentary tract, all of which are readily accessible to x-ray investigation.

So much in general for the use of x-ray methods in the diagnosis of cancer. With regard to the matter of treatment, we have already heard tonight that modern cancer treatment is limited to the use of surgery, x-rays and radium. The last two form the province of the radiologist's work. In most communities both agents are handled by the radiological specialist. In some places his efforts are limited to x-ray treatment, while radium is applied by the clinician in the various specialties. Fundamentally it makes very little difference which system is in use, so long as the agents are applied by one who has the proper training, experience, and skill. As you have been told by the two previous speakers, the general tendency in the treatment of many types of cancer, particularly in the mouth and in the uterus, has been in the direction of limiting the purely surgical attack and increasing the application of radiation methods.

The effects of treatment with x-rays and radium as you probably know are the results of the essentially destructive power of these agents when applied to growing tissues. This destruction of the tissue cells is proportional to the amount of radiation absorbed by the tissues and also is proportional to the embryonal character of the tissues. The more primitive and undifferentiated the cells are, the more sensitive they are to radiation. Conversely the more highly organized the tissues are the more resistant they become to either x-rays or radium. These facts are utilized in tumor treatment, and upon them is based the desirability of biopsy examination as a preliminary to radiation treatment. The more malignant types of tumor, with actively dividing and more embryonal types of cells are generally more easily destroyed by rays than normal tissues.

The tendency in radiation treatment in the past few years has been to increase the amount of actual rays absorbed by the tumor cells so as to produce a lethal action. The problem has been to concentrate enough rays in the cancer to kill off the malignant cells without destroying the surrounding normal

tissue beyond the capacity for repair. This has not always been easy, but the development of cross-fire with x-rays, the improvement of filtration, and more recently the long-continued treatments after the method of Coutard, have helped in the solution of this problem. The last-named method is also known as the protracted or fractionnated method of treatment, and consists essentially of repeated relatively small doses of high voltage rays which bombard the malignant tissues from various angles in a sufficient amount to eventually destroy the more sensitive malignant cells. At the same time, the intervals of rest between the doses are sufficient to permit recovery of the neighboring normal tissue cells. Theoretically this sounds very simple, but in practice the problem is extremely difficult in certain locations and with certain types of tumor. These modern long-continued methods last anywhere from three to six weeks with daily treatments, and often twice daily. There are of course increased local and constitutional reactions, but at the same time there is increased effect in stopping the development of the cancer, which is the primary problem. Originally these methods were applied only to cancer of the upper respiratory tract, but eventually they have been used in the treatment of malignant tumors in every part of the body.

As for the radiologic treatment of cancer of specific organs, I can only discuss a few subjects in a very limited way. You have already heard from Dr. Chase and Dr. Waterman with respect to the treatment of oral cancer and pelvic cancer in women. I will touch on a few of the more important groups of cancer in other locations, and will say a word first about the matter of cancer of the breast. In the past few years there has been considerable discussion and controversy about the wisdom or lack of necessity of either preoperative or postoperative radiation. Gradually however the value of this radiation has been impressed upon most surgeons, so that today in most clinics radiation treatment is being used more and more. To my mind however the most important factor in connection with treatment of cancer of the breast is the surgeon's point of view with respect to what constitutes real operability. The term "operable" has been used very loosely in many places, and has varied tremendously. In the past, many cases of supposedly early cancer of the breast were found shortly after radical operation to have already had distant metastases either in the bones or chest, which were detected by eventual x-ray examinations. Today a preliminary x-ray examination of the chest and major part of the osseous system is regarded as a necessity before operation even in cases which clinically appear to be in the first stage. Again in the borderline cases, those with axillary glands, and those with extensive local development around the tumor itself, there is a tendency today to limit treatment in such cases to purely radiation methods rather than surgery first and radiation afterwards. In other words, the chances for prolonging life and comfort in such cases seem to be better if no surgery is used at all.

In cancer of the kidney, radiation treatment before surgery has been developed in the past few years, chiefly by the efforts of Waters. He has shown that many of the sensitive cancers will shrink enormously in size under x-ray treatment, making the subsequent operation simpler and the chances of arrest much greater. Here however reliance upon x-rays alone is very dangerous. Delay in surgical removal may spell the difference between long arrest and rapid recurrence.

With bone sarcoma, the sensitive types, such as Ewing's tumor, react very quickly and favorably to x-ray treatment. Here again there may be a temptation to treat the lesion with x-rays alone in order to avoid amputation. Geschickter has recently reviewed the figures and has shown that there is not a single case on record of cured bone sarcoma, of whatever kind, unless amputation was a part of the treatment, regardless of whether rays were used or not.

I shall mention only one other type of tumor, to speak of its universality, and that is malignant lymphoma. Within recent years the enormous frequency of this tumor has been increasingly forced upon our attention. In this part of the country particularly, malignant lymphoma must be considered in the differential diagnosis of tumors of practically every organ, including thoracic and abdominal viscera, as well as every bone in the body. In these cases, the response to small doses of x-rays constitutes an important diagnostic as well as therapeutic agent. The characteristic rapid shrinking under radiation will make the diagnosis clear even when the subsequent pathological examination of some excised gland may give equivocal information. In many of the cases of lymphoma that are limited to either single viscera or single bones, x-ray treatment alone has been sufficient to produce an arrest for many years. In other cases where accessible, removal of the single focus surgically has accomplished the same results.

I will now speak of a few of the modern trends in radiation treatment that are important to bear in mind in connection with the entire problem of cancer treatment. In the first place there has been considerable publicity about the matter of increased high voltage or supervoltage. You hear about the development of machines capable of operating at 400,000 and 500,000 and even 1,000,000 volts. Various claims often of a sensational nature are advanced for the supposed superiority of these methods as compared with the conventional methods of high voltage treatment. It is true that the development of high voltage in the past has been responsible for many of the improvements in the x-ray attack upon cancer in general. As mentioned before this was due to the possibility of greater concentration of lethal doses of rays in the depths of tumors with less damage to the skin and surrounding normal tissues. Theoretically, with increased voltage the possibility for such concentration also increases. However, we are able to produce essentially the same results with the generally employed high voltages by making changes in distance, filters, etc. The newer machines on the other hand can produce these results more easily and in a shorter period of time. The entire matter is still under careful investigation, and it will take some years with a careful follow-up of many cases before we know whether x-ray treatment of cancer in the future is to be done with supervoltages or with the medium high voltages.

Another important trend is the spread of x-ray treatment as a supplement to regional treatment with radium. This applies to radium treatment in the cervix, in the body of the uterus, in the rectum, prostate, and particularly in oral cancer. In most clinics, cancer in these parts is treated by both radiation methods, the x-rays supplementing the radium, and being directed particularly to the less accessible cancer in the lymphatic distribution.

More recently this trend has extended to a point whereby purely x-ray methods are beginning to supplant the local use of radium. This is taking place especially in cancer of the cervix, rectum and mouth. The methods are along two main directions. The first of them is the Chaoul system, devised in Germany, and consisting of a contact method with very low voltage x-rays. This originated purely as a matter of economy when there was not sufficient money to obtain adequate amounts of radium. Under the circumstances new x-ray tubes were developed which produced large amounts of radiant energy, applied directly to the surface of the tumor or within a few millimeters. These tubes were easily applied in body cavities, as well as to external skin cancer. The simplicity of this system, the short time required for each daily treatment, and the general economy have made it a very attractive method. The results of this treatment, which has been in use for about four years, seem very favorable as compared with local radium methods, and I have every reason to believe that the application of this system will spread in the next few years.

While this development has been going on there has also been an effort in many large cancer clinics to use the conventional high voltage x-ray machines, with special speculum attachments, to introduce x-rays directly into the various body cavities. Here again the method is still under development, but the results reported seem very satisfactory. We have the same economy already mentioned, ease of application, no need for anesthesia, and a generally ambulant treatment. Of course the local application of x-rays does not eliminate the need of supplemental use of x-rays in the treatment of the regional lymphatics, as I have already described. It is difficult at this time to attempt to predict what the future will bring out, but my own judgment is that just now, when radium is becoming very much cheaper due to the discovery of rich sources of supply, it seems very probable that before long it will be largely if not entirely supplanted by x-ray methods, which will be much more economical and much simpler.

A few words as to the dangers of over-radiation, and I am through. Very often enthusiasm with regard to the benefits of the newer methods of x-ray and radium treatment has obscured the well-known fact that radiation treatment depends upon the use of essentially dangerous elements. In many instances over-radiation has resulted in catastrophe. No one can seriously believe that the end justifies the means if the treatment leaves the patient with his cancer arrested or even destroyed, but with extensive tissue necrosis and serious secondary infection which produce an end state far worse than the original cancer. Enthusiasm for new methods must be tempered with judgment in this as in all types of treatment. As I see the general trend in the treatment of cancer, it appears to be more and more away from the strictly surgical methods, and more toward either combined or purely radiologic methods of treatment. This will require still more judgment and conservatism in the use of these very potent agencies.

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ANESTHETIC EXPLOSIONS

When, in 1846, William Morton first gave ether for a dental operation, he poured ether on his handkershief for the patient to inhale, while his assistant held the lamp. Ether is inflammable and the vapor is explosive when mixed with oxygen but luckily no fire nor explosion marred this first demonstration. During the millions of operations in which ether was used following this historic event a few explosions occurred but they were for the most part without serious consequence. In this period, ether was given many thousands of times, by flickering gas lights, in rooms with open grate fires, beside hot kitchen stoves, close to live thermocauteries, with sparking electric motors and all sorts of defective electrical connections. Yet chloroform, which decomposes in the presence of an open flame, gave us more concern. With the advent of ethylene, acetylene and cyclopropane as anesthetics, we not only learned that these gases are highly explosive and likely to lead an unconscious patient to a miserable death but also we are told that ether vapor has an explosive index even higher.

Anesthetic explosions occur rarely, which is fortunate, because they are among the most terrifying of surgical tragedies. The patient enters the hospital for some minor operation or for childbirth; the anesthetic is administered and the operation progresses. Perhaps a cautery is in use or a spark of static electricity ignites the mixture of anesthetic and oxygen. There suddenly is a sharp explosion; the gas apparatus may be wrecked, and often the blast extends to the patient's air passages filled with the explosive mixture. The patient's lungs then are ruptured and he dies a painful and distressing death.

Of the anesthetic agents in use at the present time, chloroform and nitrous oxid are not explosive; ethylene, cyclopropane, acetylene, ether and ethyl chloride form explosive mixtures when combined with oxygen. Acetylene is little used as an anesthetic. Ethyl chloride is more likely to burn than to explode. The possibility of explosion with mixtures containing ethylene, cyclopropane or ether vapor must constantly be kept in mind. The measures commonly taken to avoid these explosions; such as electrical connection of the anesthetic apparatus, the anesthetic and the patient to a metallic grill inlaid in the floor and carefully grounded, keeping a high percentage of humidity in the atmosphere of the operating room, posting signs warning of the explosive nature of the agent in use, care in the use of cautery or electrical appliances, frequent inspection of electrical connections; all have proved unreliable in prevention of these tragic accidents.

Statistical estimation of the frequency of explosion of different anesthetic agents would be an idle exercise; no known law governs their occurrence. Considering the tremendous number of times that ether has been used, the number of ether explosions in comparison with ethylene or cyclopropane is almost negligible. The safety of ether results from the high specific gravity of its vapor. While ethylene and cyclopropane diffuse rapidly in every direction, heavy ether vapor sinks immediately to the floor. It travels down the stairs and its characteristic odor is evident in the hospital grounds. While no precaution is known that will assure us against explosions of ethylene or cyclopropane, ether explosions may readily be guarded against. A mixture of ether vapor with oxygen should not be passed through a metallic or rubber tube. Open flames, cautery irons and sparking electrical apparatus should be kept at a level higher than the supply of ether. Ether vapor should not be confined in a small closed room. The ether explosions which have

occurred have been due to gross disregard of these principles. A charged ether cone was placed on top of the cabinet which housed an electrical suction pump; ether vapor descended to the sparking motor, exploded, and destroyed the cabinet. An anesthetic, in a small closed room, turned the switch of an electrical suction pump which was on the floor; an explosion followed which burned the anesthetist slightly but did not harm the patient. Following an operation, the anesthetist flushed out the gas-oxygen-ether apparatus with pure oxygen; the mixture of gas-oxygen and ether exploded destroying a part of the apparatus. Oxygen tanks and gas-oxygen apparatus are labelled "Use No Oil." A mechanic wiped off the seat of an oxygen cylinder valve with a greasy finger; when the flow of oxygen was started, a serious explosion followed.

Ethylene or cyclopropane may explode today, tomorrow, or next year. Ether explosions are preventable. Before forsaking this well tried agent, to experiment with less certain anesthetics, the voice of the patient should be heard. His are the lungs which may be ruptured.

PROVIDENCE MEDICAL ASSOCIATION

Minutes of the December Meeting

A regular meeting of the Providence Medical Association was called to order by the President, Dr. Alex. M. Burgess, on Monday, December 5, 1938, at 8:45 P. M. The minutes of the last meeting were read and approved. The Secretary reported for the Standing Committee as follows:—

1. That the following nominations have been made for officers of the Association for the year 1939:—

For President, Harry C. Messinger,
For Vice President, John G. Walsh,
For Secretary, Herman A. Lawson,
For Treasurer, William P. Davis.
For members of the Standing Committee for five years, Alex. M. Burgess and Frank B. Cutts,
For Trustee of the Medical Library for two years, John E. Donley,
For Councilor for two years, William S. Streker,
For Reading Room Committee (three men for one year term), Frederic A. Coughlin, Joseph B. Webber and Robert G. Murphy,
For Delegates to the House of Delegates of the Rhode Island Medical Society, A. J. Pedorella, J. M. Beardsley, C. R. Doten, H. J. Gallagher, N. A. Bolotow, Joseph Franklin, Charles Bradley, W. S. Streker, H. A. Lawson, J. P. Eddy, 3rd. D. V. Troppoli, Maurice Adelman, F. Ronchese, A. M. Burgess, G. F. White, M. Saklad, J. A. Hayward, H. C. Messinger, E. W. Bishop, C. L. Southey, H. F. McCusker, W. P. Buffum, James Hamilton, J. G. Walsh, M. M. Potter.

2. That a motion was seconded and passed that the President place before the membership for vote at the next meeting the question of transferring the annual meeting from January 2, 1939, to January 9, 1939, in view of the fact that the New Year Holiday will be celebrated on January 2.

3. The motion was seconded and passed that an annual report of each committee of the Association be mimeographed and distributed to all the members of the Association at the annual meeting.

4. The motion was seconded and passed authorizing the Executive Secretary to take the necessary steps to become a Notary Public in order that he may offer the services of such office to the members of the Association.

The report of the Standing Committee was approved and accepted.

Dr. Messinger read the preliminary report of the Committee for the Study of the Need and Supply of Medical Care. The report was accepted and placed on file.

Dr. Langdon read the report of the Committee on Publication, which included recommendations for enlarging the Rhode Island Medical Journal under the auspices of the Providence Medical Association. The report was accepted.

Dr. Batchelder, Chairman of the Committee for the Study of a Plan for the Early Detection of Tuberculosis, gave a preliminary report of progress in the work of the Committee and placed before the membership through the Chair the following motion:—That the Legislative Committee be instructed to confer with the Committee on Tuberculosis and Silicosis with the view toward drafting an amendment to the State Law regarding the reporting of cases of tuberculosis so that it will be possible for city and town health departments and other interested organizations to obtain information regarding tuberculosis patients. This motion was seconded and passed. The President announced that the Committee would be continued.

The President placed before the membership the recommendation that the annual appropriation of five hundred dollars for the purchase of new medical publications and for the binding of old journals be considered. The recommendation was cast in form of a motion by Dr. Mowry and was seconded and passed.

On the motion of Dr. William S. Streker, the recommendation of the Standing Committee that the date of the annual meeting be transferred in 1939 from January 2 to January 9 was seconded and passed. Prior to the passage of the motion, the President introduced Dr. Edward S. Brackett, President of the Rhode Island Medical Society who spoke briefly regarding attendance of members at the meeting of the State Society to be held on January 6, 1939.

The President appointed Dr. Ralph L. DiLeone and Dr. Anthony Corvese to serve as the committee to prepare the obituary of Dr. V. L. Raia.

The motion of Dr. Mowry for the re-election to membership of Dr. J. P. Lobo and Dr. Earle Brennan was seconded and approved.

The business of the meeting being concluded, the President introduced Mr. Myron Weiss, Associate Editor in particular charge of news of medicine for *Time*, Weekly Newsmagazine, who read a timely paper on "The Future Pattern of Medicine."

Dr. David R. Lyman, Superintendent of Gaylord Farm Sanatorium in Wallingford, Connecticut, next presented an interesting paper on "The Early Diagnosis of Tuberculosis," discussion of which was opened by his associate, Dr. William H. Morriss. Members present who joined in the subsequent discussion were Dr. John C. Ham, Dr. Daniel V. Troppoli, Dr. Elihu S. Wing, Dr. William S. Streker and Dr. Joseph N. Corsello.

The meeting was adjourned at 11:00 P. M. Attendance was 220. Collation was served.

Respectfully submitted,

HERMAN A. LAWSON, M.D.,
Secretary.

AMERICAN MEDICAL ASSOCIATION SCIENTIFIC EXHIBIT

Application blanks are now available for space in the Scientific Exhibit at the St. Louis Session of the American Medical Association, May 15-19, 1939. Attention is called to the fact that the meeting is a month earlier than usual, and applications close January 5, 1939. Blanks will be sent on request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn St., Chicago, Ill.

RHODE ISLAND HOSPITAL

Second Reunion of Former Interns

CLINICAL PATHOLOGIC CONFERENCE

Friday, September 9, 1938

Case presented by Dr. Cecil Dustin

A. S., 56 year old white, married, male, entered the hospital complaining of sleeplessness, anorexia and dyspnea, swelling of ankles and feet. The dyspnea had been irregularly troublesome for three years, but sleeplessness and swelling of ankles were of three weeks' duration. For three years, he had had dyspnea and "gas pains" with overeating or on exertion; this did not seem to become worse until one year ago. Since then, the dyspnea on exertion had gradually increased in frequency and duration and, for one year, he had had attacks of nocturnal dyspnea, gradually becoming more frequent and severe. For three weeks, he had been unable to sleep because of orthopnea and a feeling of oppression in the epigastrium. He had had some substernal pain, but never severe or radiating. The attacks of dyspnea became almost unbearable and he could not eat and took liquids only in small quantities and irregularly. Passed dark colored urine frequently and in small amounts. For a few days previous to admission, he had swelling of the ankles which was becoming progressively worse. At no time had the pain in the chest been severe enough to make him feel frightened or apprehensive regarding his immediate future.

P. H. Married thirty years. Used tobacco probably more than average, and more than the average amount of alcohol since the age of thirty-five. Dietary habits, not abnormal. Mother died of heart trouble. Until age eighteen, had frequent attacks of tonsillitis, but no rheumatism of any kind. At age twenty-six, had penile sore lasting several weeks. No treatment. At age thirty-one, had sore on lip, treated with ointment. Had blood test two years later at age thirty-three, which was said to be negative. Life insurance examination with blood test in 1918 — results were not reported, but insurance was issued. Never knew of any positive blood test and had no intravenous treatment at any time. He had had numbness and cyanosis of the fourth and fifth fingers on the left hand ever since childhood, cause unknown. He had no other illness that he could remember.

P. E. Temperature—98.4. Pulse—104. Respiration — 36. Blood pressure — 148/60. Extremely

orthopneic, florid male with jaundiced sclerae, obviously very ill. Pupils regular and equal, react to light and accommodation. Eye grounds, normal except for slight venous engorgement. Arteries, not abnormal. Teeth, decayed. Gums, retracted and infected. Trachea in the mid line. A definite trachael tug during respiration; questionable, during expiration. Thorax — increase in anterior posterior diameter, very little respiratory excursion and none on the left side. On the left, it is flat to percussion in the lower two-thirds.

T. F. and B. S., absent in the lower two-thirds of the left chest. Above the flat area, coarse musical rales and some increase in transmission of breath sounds and spoken voice, evidently, free fluid in the left pleural cavity. On the right side, many moist rales over the whole lower two-thirds. Question of a small amount of fluid at the base posteriorly or elevated diaphragm. One hour after admission, blood pressure found to be 102/80. Heart—l.b.d., indistinct because of pleural fluid. Very diffuse impulse. No thrills. Sounds of good musical quality and did not seem abnormal. No murmurs made out. A^2 loud and ringing with musical quality. Three different examiners agreed on the findings in the chest. No pericardial or pleural friction sounds. Abdomen—not markedly distended. Liver edge, two inches below c.m., smooth, slightly tender. Spleen—not felt. Question of a small amount of free fluid in the abdomen. No other abnormalities found. There was definite pitting oedema over the lower lumbar and sacral region, oedema three to four plus. Pitting oedema below the knees, over the shin as well as posteriorly. Slight oedema of the scrotum noted by one examiner and not noted by two other examiners. No clubbing. Slight cyanosis of the extremities. Reflexes—generally hypoactive, but all present. Babinski — negative. No clonus. No asthenia or hyperasthenia. No abnormally enlarged lymph nodes. Skin generally negative except for oedema. One examiner suggested possible hyperthyroidism because of the general appearance and possible exophthalmos, although this is probably a familial characteristic.

Laboratory findings on admission were as follows: Wasserman and Hinton—positive. Urine—+ + albumen. Morphological blood—normal except for W.B.C. 12,600, 82% Polys. B.U.N.—29. Creat.—2.4. Glucose—89. Icteric index—17. Stool —weak reaction to occult blood. X-ray of the chest showed evidence of fluid in both pleural cavities, more on the left and moderate enlargement of the heart with chronic passive congestion. Electrocardiogram was within normal limits.

Because of positive serology, the possibility of luetic aortic disease was considered, but there was nothing in the physical findings to substantiate such a diagnosis, the questionable tracheal tug being the only positive finding with no positive evidence of previous or present hypertension. Because of frequent tonsillitis in early years, the diagnosis of rheumatic disease was suggested by someone who examined the patient. Fairly good diuresis was obtained with Salyrgan, about eight pounds of fluid being lost in six days. On the tenth day in the hospital, the left chest was tapped and 1400 c.c of fluid obtained. The fluid showed a moderate number of pus cells. No organism seen in smear. Culture gram positive dipolcocci in chains, bile, soluble. Chest tapped on the seventeenth day and 300 c.c of fluid obtained. Sp.g.—10.10., many red blood cells, pus cells. Culture gram positive diplococci in chains, not bile soluble, identified hemolytic strept.

During this time, there was slight rise in temperature above normal nearly every day, occasionally as high as 101, usually one degree or less. Pulse—average 90 to 100. Respirations—varying from 20 to 40. Oedema persisted. Diuresis used about once a week with fair results. Repeated blood chemical test showed gradual drop in B.U.N. until on the twenty-third day in the hospital, it was 19. Creat. dropped to 2.2. The serum protein on one examination was 3.7 and on another 4.4. On the twelfth day in the hospital, the visiting physician discovered unequal blood pressures 140/60 in the right arm and 90/80 in the left arm. One week later, pressure in the right arm 132/62 and left arm 78/64. Five days later, the right arm 125/80 and left, 75/60. Differences in volume in radial and brachial pulse was noted and second chest plate made on the twenty-fourth day in the hospital showed increased density at the left base extending to the third anterior interspace consistent with fluid and mottled density at the right base due to congestive changes. The right leaf of the diaphragm has a normal contour and is well defined. There is no fluid in the right base. There is enlargement of the heart shadow in the region of the left ventricle. The heart sounds were definitely less forceful in character and the condition gradually became worse. A second electrocardiogram on the twenty-first day in the hospital showed quite definite changes as

compared with the first one. The patient died on the twenty-ninth day in the hospital, the weight having dropped from 188 on admission to 158½ pounds six days before death.

COMMENT

DR. DUSTIN: The diet was gone into. He got quite a variety of foods. It does not seem as if deficiency enters into it. In spite of the history of frequent tonsillitis no tonsilar tissue was visible. He did not admit his tonsils had been removed and I could not find anything in the record that would help us. I don't know of any ordinary type of insurance that requires a Wassermann: it may have been a sugar rather than a Wassermann. His insurance was issued so apparently there was nothing positive, Wassermann or sugar. The story of numbness and cyanosis of the fingers is interesting. He called it a bluish and purple color of two of his fingers on either hand. This was not noticed while he was in the hospital. He never had blanching of the fingers, at least no record had been made of it in the history.

P. E.: On inspiration a very definite tracheal tug was noted by one examiner but not by any other. We have two or three interns on each service and they usually record the findings and are willing to sign them, which is a good point. After you sum up the various opinions you are apt to get the right examinations. I found three recorded blood pressures—the highest 160 and the lowest around 120. There is no history of any previous hypertension and we have no symptoms that would indicate it. There was a good deal of disagreement concerning the chest findings. There was no clubbing of the fingers. The signs are consistent with fluid. Left border of the heart was obscured because of fluid. Basal metabolism rate was determined during a fever and probably of no value. Except for the positive serology the laboratory findings are remarkably negative. Sometimes it is not easy to identify some chest cultures: this organism was first reported as being bile soluble but later was thought to be a hemolytic streptococcus.

In spite of treatment the edema persisted, yet we were getting good response from salyrgan. Respirations 20 to 40. With the patient in bed this is abnormal. It seems to me that we see very few of them that have 20. I think it is pretty important. The blood pressure findings are very interesting. Every time the blood pressure on the left is markedly below that on the right. It is a very definite difference.

During the last few days in the hospital he raised a definite sputum. There was very definite evidence of at least two pulmonary infarcts. Sudden attacks of breathlessness — not mentioned in any of the follow-up noted but the nurses recorded those instances. I am quite sure of pulmonary infarcts. The liver was below the costal margin by two examiners. There was some disagreement in the matter of fluid in the abdomen on admission.

Those are the high spots and that is all the information available.

Demonstration of X-ray Films

DR. BATCHELDER: These first two films were taken on admission: they show essentially the same things; evidence of fluid at both bases, about equal on the two sides, possibly a bit more on the left than the right. The borders of the heart are obscured so that the exact size of the heart cannot be determined from these films. Two weeks later he had two more films and at this time the right side had practically cleared up. There still remains a little increased density at the left base but the diaphragm is apparently showing through quite well. Now we can get a better view of the heart: it does seem moderately enlarged in the transverse diameter. The supracardiac density is not greatly widened so this is the picture of a decompensated man on admission who has mostly recovered in three weeks time. The left ventricle is not well outlined so we cannot be sure as to whether there was an aortic insufficiency but from the history there was no aortic murmur so it is doubtful if he did have much aortic failure. The shape of the heart is more that of diffuse enlargement. The lung fields are relatively clear except for some involvement at the left base. In the first two films this has the appearance of fluid and what may be in the lung underneath is pretty hard to say. There still remains a little thickening at the right base but it is quite small. I would think it would be part of a chronic passive congestion picture.

DR. DUSTIN: Some of the clinicians disagreed quite a bit as to what this shadow might be (pointing to film).

DR. BATCHELDER: My impression would be that it is due to an engorged vein.

DR. DUSTIN: At the time this man died things were just as I indicated. No definite diagnosis.

DR. WEYLER: Dr. Dustin asked me to discuss the difference of blood pressure findings. The brachial vessels on either side may be of different calibre. The brachial vessel on one side might be

compressed by the shoulder blade. Other causes of differences would be aneurysm, dissecting aneurysm, new growths, atheroma of subclavian, embolism, thrombus in the clavicular region. It is interesting to note that normally the individual in the prone position shows no difference in blood pressure between the arms and legs while on standing it is increased in the legs over that of the arms. This difference is equal to the height of the column of blood. Lower blood pressure in the leg compared with higher in the arm is more usual and we usually think of coarctation of the aorta which is a very rare condition. It is more definitely found however in obstruction of the common iliac and femoral vessels.

Dr. Dustin: The differential diagnosis considered in this case seemed to favor aortic aneurysm as best accounting for the symptoms. 2nd: Aneurysm and coronary occlusion.

Demonstration of Postmortem Material

Dr. Clarke: The postmortem examination was limited to the chest. Here is the heart and aorta. It shows a very definite syphilitic aortitis and there is marked narrowing of both coronary orifices. The aortic valve appears very little involved. It measures only 7 cm. in circumference. There is no reason to think it was not competent. To dispose of the difference of blood pressure in the arms there was marked narrowing of the subclavian orifice on the left.

In addition to the narrowing of the coronary orifices the left coronary artery, down a cm. or 2, is quite markedly narrowed, reducing the lumen to a mere slit. It is mostly intimal thickening histologically. They tell us that syphilis does not involve the coronaries below their orifices. I suspect that this is not due to syphilis but I don't know how to prove it is not.

There are grayish streaks running through the left ventricle, both laterally and posteriorly. The wall is of normal thickness and the left ventricle is not dilated. There is some myocardial damage but no evidence of any left sided heart failure. The right auricle and ventricle are dilated. There is thrombus in the auricle. The right heart is hypertrophied and thickened. The scarring which we saw on the left is not visible on the right. We have a heart which has a syphilitic aortitis but we find definite evidence of right sided failure. We find nothing in the heart to explain it except that the orifice of the right coronary is narrowed. We have the lungs here and in the pulmonary vessels are thrombi, large ones, old, attached and organized and microscopically all through the lungs in the small arteries are organized thrombi that must have been present there for months, at least. In addition, there is much scarring or fibrosis of the lung tissue and infiltrations of lymphocytes and plasma cells.

We have many sections of this heart. The aorta shows typical syphilis. In the heart we can see a great many of the things that Dr. Paulin showed you yesterday as characteristic of syphilitic myocarditis. I do not know how to be certain about that. I think there is a good possibility of syphilitic myocarditis. While this may have weakened the heart somewhat it is not the cause of his right sided cardiac failure. I believe the pulmonary lesion is responsible for the cardiac failure and death. There is even more skepticism concerning syphilitic pneumonitis than there is concerning syphilitic myocarditis. Those who believe in it describe lesions much like those in this case.

Clinical Diagnosis:

Aortic aneurysm (syphilitic).

Coronary occlusion.

Pathological Diagnosis:

Syphilitic aortitis (with narrowing of orifices of the right and left coronary and left subclavian arteries).

Chronic pneumonitis and thrombosis of pulmonary arteries.

Evidence of right sided cardiac failure.

OBITUARY

D. FRANK GRAY, M.D.

Dr. D. Frank Gray was born in Brooklyn, New York, on September 18, 1863. After a common school education and an interval at work he spent a year at Dartmouth Medical College and was graduated from Bellevue Hospital Medical College in 1892. He served an internship at Blackwells Island and at Christ Hospital, Jersey City. For many years he was on the active staff of St. Joseph's Hospital of Providence. He was a member of the American Medical Association, the Rhode Island Medical Society, and the Providence Medical Association, and of Tyler Council, Knights of Columbus.

His early years were devoted to general practise, but in later years as an internist his chief interest

was in gastr: enterology. He was persistently enthusiastic in his efforts to keep abreast of the times, as is evidenced by regular attendance at medical meetings and the various clinics and his active participation in them and by his post-graduate work in Boston and elsewhere, continuously kept up weekly for the past thirty years. He was painstaking in his work, genial and kindly in his relations with his confreres and was dearly loved because of his quiet personality, his sympathetic understanding attitude toward his patients and his highly intelligent and faithful service to them. He may well be classed as one of Lord Chesterfield's "Nature's Gentlemen."

He is survived by his widow, Anne (Devereaux) Gray, by a daughter, Helen, wife of Professor Joseph Jackson of Yale, and by two grandchildren.

GEORGE S. MATHEWS, M.D.
WILLIAM S. STREKER, M.D.

WILLIAM H. HIGGINS, M.D.

Dr. William H. Higgins died suddenly in Providence, May 23, 1938. He was born in Marion, North Carolina, December 14, 1873. He attended the elementary schools there, leaving to go to Livingston College at Salisbury, North Carolina, from which he was graduated and later became a Trustee. He graduated from Leonard Medical College at Raleigh, North Carolina, in 1902, took a post-graduate course at Long Island College of Medicine and came to Providence, registering June 1, 1903.

He enjoyed an extensive general practice, maintaining an office at 144 Dexter Street, then 312 Cranston Street, and lately at 212 Union Street.

He was a member and Chairman of the Board of Trustees of Winter Street A.M.E. Zion Church, a member of many fraternal organizations, a member of the Providence Medical Association, the Rhode Island Medical Society, the What Cheer Medical Society, and Past President of the National Medical Association. He was interested in various civic movements and was appointed a member and became chairman of the Rhode Island State Board of Podiatry in 1936.

He is survived by his wife, Bertha G. Higgins; a daughter, Prudence C. A. Higgins, a social worker in the Rhode Island Public Welfare Department, and a host of friends by whom he will be mourned.

JAMES A. GILBERT, M.D.
CARL R. GROSS, M.D.

CREIGHTON WALTER SKELTON, M.D.

Dr. Creighton Walter Skelton, a prominent general practitioner in Providence for the past thirty-eight years, died at his home, 145 Narragansett Boulevard, on June 26, 1938.

He was born in Kingston, New York, on September 5, 1873. In that city he received his preliminary education, graduating from Kingston Academy. He obtained his professional education at Albany Medical School, Union College and received the degree of Doctor of Medicine in 1898. He served his internship in the Albany Hospital.

Doctor Skelton located in Providence in 1900 and continuously practiced here. In 1913 he was married to Irene Beaman. In 1926 he was appointed business manager of the Rhode Island Medical Journal which position he held until his death and, by his untiring efforts and successful management, he helped to raise the Journal to an outstanding position among medical publications. He was associate editor of Albany Medical Annals, alumni journal of his Alma Mater.

Dr. Skelton was a member of the American Medical Association, the Rhode Island Medical Society, the Providence Medical Association, a past president of the Medico-Legal Society of Rhode Island and in 1929 served as coroner for the city of Cranston. He was also a member of Wadsworth Lodge, No. 4, of the Freemasons of Albany, New York, and a past patron of the Eastern Star. Dr. Skelton is survived by his wife and his daughter, Mrs. Elizabeth Lind.

During the course of his long practice he gained the esteem of many patients and friends by whom he will be greatly missed.

A. R. V. FENWICK, M.D.
G. E. TEEHAN, M.D.

LOCAL EVENTS

December 3. Dr. F. Ronchese attended the annual Atlantic Dermatological Conference at the Johns Hopkins Hospital, Baltimore.

December 7. Dr. Bertram H. Buxton, President of the New England Obstetrical and Gynecological Society, presided at the annual meeting held at the University Club in Boston. Twenty Rhode Island members attended. Clinics were held by the Lahey

Clinic and at the Free Hospital for Women, the Massachusetts General and Carney Hospitals. Dr. John G. Walsh was elected Vice President of the society.

December 9. Dr. Halsey DeWolf entertained the Friday Night Medical Club. His subject was "The Thoracic Clinic of the Rhode Island Hospital." Dr. Philip Batchelder demonstrated X-ray films. The subject was discussed by Drs. Bird, Dustin, Peters, Gormly and Clarke and by the members of the club.

December 12. The Providence Medical History Club met with Dr. Wilfred Pickles. He read a paper on "Antonio Scarpa" and demonstrated a fine copy of the Tabulae neurologicae anatomicae.

December 13. The regular meeting of the General Staff of the Homeopathic Hospital of Rhode Island was held at noon. Dr. John Williams spoke on "Gynecological Problems in General Practice." Luncheon was served at the close of the meeting.

December 13. Dr. Herbert G. Partridge entertained the Amos Throop Medical Club. His subject was "Maternal Mortality." It was discussed by Drs. Brackett and Jordan and by members of the club.

December 15. The subject for the meeting of the Staff Association of St. Joseph's Hospital, held at noon, was "Moving Pictures Showing the Use of Salyrgan as a Diuretic"—followed by the "Presentation and Discussion of a Maternity Case with a Nephrotic Syndrome." The speakers were Drs. J. A. Gormly, J. T. Ward and G. E. Teehan.

Dr. Philip Batchelder has moved his office to 129 Waterman Street.

Dr. Clarence E. Bird has opened an office for the Practice of Surgery at 116 Waterman Street.

UPHOLD HONOR OF PROFESSION

The obligation assumed on entering the profession requires the physician to comport himself as a gentleman and demands that he use every honorable means to uphold the dignity and honor of his vocation, to exalt its standards and to extend its sphere of usefulness. A physician should not base his practice on an exclusive dogma or sectarian system, for "sects are implacable despots; to accept their thraldom is to take away all liberty from one's action and thought." (Nicon, father of Galen.)

From the Code of Ethics of the A. M. A.

PROVIDENCE HEALTH DEPARTMENT NOVEMBER, 1938

During the month of November more than seventy cases of mumps have been reported to this department. We are evidently experiencing an epidemic of this disease. At present the greatest portion of cases is on the Smith Hill and Mt. Pleasant section, although no part of the city is free. This is a reportable disease and physicians should report all cases of mumps to this department. All children who have contracted mumps are excluded from school as long as there is tenderness and swelling. The city is comparatively free of other cases of communicable disease.

**Vital Statistics*

	1938 Nov.	*1937 Nov.*
Deaths all	274	271
Deaths under 1	23	18
Deaths over 70	107	77
Births	432	430
Marriages	207	283
Infant Mortality	53.4	43.
Death Rate	13.68	13.52
Birth Rate	21.47	21.49

Principal Causes

1. Heart Diseases	83	68
2. Cancer	41	47
3. Pneumonia	15	10
4. Nephritis	18	26
5. Cerebral Hemorrhage	10	28
6. Auto Accidents	1	8

Communicable Diseases

	Cases	**Deaths*
Diphtheria	0	0
Scarlet Fever	12	0
Measles	0	0
Whooping Cough	84	1
Pulmonary Tuberculosis	0	8
Septic Sore Throat	8	0
Typhoid Fever	3	0
Poliomyelitis	0	0
Gastro Enteritis and Bac. Dys.	2	2
Epid. Encephalitis	0	0
Epid. C-S Meningitis	0	0

*Includes non-residents.

MICHAEL J. NESTOR, M.D.,
Superintendent of Health